

PROPOSAL TO REVIEW THE DIETARY GUIDELINES FOR AMERICANS 2010

Premise:

The current dietary guidelines do not provide science-based advice to promote health and to reduce risk for major chronic diseases through diet and physical activity. The major causes of morbidity and mortality in the United States, identified in the current dietary guidelines (DGA2005) are related to poor diet and a sedentary lifestyle. DGA2005 also concludes that the most important factors contributing to the increase in overweight and obesity in the US are energy imbalance (more calories consumed than expended), compounded and a 'poor' diet.

The evidence supporting that it is not the total amount of calories but how calories are comprised, i.e. the nutrient composition of the diet and the source of calories, is now abundant and needs to be considered if sound, realistic and truly science-based guidelines are to be recommended. The literature on carbohydrate restriction is also abundant and the results of studies in which true carbohydrate restriction is compared to a diet structured according to DGA2005 suggest that carbohydrate restriction goes beyond mere therapeutic use. In fact, there have not been reports of diseases, deficiencies and/or fatalities after adopting a carbohydrate-restricted or carbohydrate-controlled diet. It is noteworthy that a large number of studies that attempted to study carbohydrate restriction did not design a 'low-carbohydrate' arm in a correct way. When computed, the amount of carbohydrates were many times higher than what it is currently accepted and proposed as 'low' (i.e. 20-40 grams of effective carbohydrate content, ECC, defined as the total carbohydrate content of foods minus their fiber content).

When true carbohydrate restriction/controlled is adopted, the amount of protein is usually increased, not the amount of fat. A true carbohydrate controlled diet reduces the amount of effective carbohydrate while ensuring the adequate intake of protein (based on individual size and level of physical activity) and does not encourage the increase in fat intake as a necessity. Instead, with respect to fat intake, a true and well structured low-, restricted- or controlled carbohydrate diet emphasizes the quality of fat and the avoidance of artificial trans-fats. The science that reportedly shows that saturated fat is detrimental has not taken into account other components in the diets used in the studies, does not provide convincing evidence of the adverse effects of saturated fats per se. The evidence that shows the benefits of a moderate fat intake (including saturated fat) does not support the ban on saturated fats or the limitation to a very small amount in the diet.

With respect to caloric intake, the standard calorie rule may not apply once a low-carbohydrate diet is adopted because the computation of calories, which take the respiratory quotient into account, needs to address a decrease in the quotient when the energy demand is supplied by the body's utilization of fatty acids as opposed to

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carbohydrate as the main source of fuel. Therefore, careful utilization of the calorie rule to determine caloric intake must be considered when recommending carbohydrate restriction. As numerous studies have showed, the amount of calories is voluntarily decreased while on a carbohydrate restricted diet, partially because of the effect of higher protein content in the diet and also because of the higher satiety provided by a higher protein intake. It is noteworthy that while there have not been diseases, deficiencies, or fatalities reported in studies where carbohydrate restriction has been studied, the majority of parameters related to the metabolic syndrome have improved; obesity has been reverted and diabetes brought either under control or managed to a point in a significant decrease in medication. In many cases, the parameters that are normally indicative of diabetes have also been reverted to normal.

Thus, taken together, if the Dietary Guidelines based on carbohydrate restriction/control will achieve the same objectives as the current GDA2005: eat fewer calories without necessarily and forcefully decreasing food intake but by taking advantage of the dynamic action of a higher protein intake, being more active and making wiser food choices, choices based not on fat content but on effective carbohydrate content instead.

Dietary Guidelines based on Carbohydrate Restriction:

Dietary guidelines based on carbohydrate restriction are based on adequate protein intake, moderate fat intake and limited carbohydrate intake. The amounts of these three macronutrients are determined as follows:

1. Determination of protein requirements. The minimum protein intake is determined based on individual lean body mass and level of physical activity but it should always be of at least 60 gr (net, not total protein) per day. To estimate the amount of protein in foods, the following conversion table may be used, which provides an easy and practical way without complicated calculations:

Meat, fish or poultry: 7 gr protein/ounce

Eggs: 6 gr NET protein/large egg; 4 gr NET protein/small egg

Hard cheese: 6 gr/ounce

Soft cheese: 4 gr/ounce

Curd cheese: 7 gr per ½ cup

Tofu: 10 gr per ½ cup

Lean body mass (LBM) can be estimated by subtracting the total fat mass from total body weight; total fat mass can be calculated by any of available methods, such as electric impedance, skin folds, waist minus wrist method (for males), etc.

Level of physical activity can be estimated as follows:

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Sedentary: no physical activity whatsoever; 0.5 gr of protein per pound of LBM.

Moderately active: 20-30 minutes, 2-3 times per week; 0.6 gr of protein per pound of LBM.

Active: participation in organized physical activity for more than 30 minutes, 3-5 times per week; 0.7 gr protein per pound of LBM.

Very Active: vigorous physical activity lasting an hour or more, 5 or more times per week; 0.8 gr protein per pound of LBM.

Athlete: competitive athlete in training, daily heavy physical workouts for an hour or more; 0.9 gr protein per pound of LBM.

2. Setting of carbohydrate intake:

Therapeutic/corrective purpose: treatment/reversion of obesity, diabetes, hypercholesterolemia, hyperlipidemia, hypertension, and all conditions related to the metabolic syndrome. For therapy purposes, the recommended level of carbohydrate restriction is between 30-40 gr ECC per day (or 10-13 gr ECC per meal assuming 3 meals per day).

Post-corrective period: once the parameters targeted have been corrected or brought under control, carbohydrate levels may be increased (but it is not mandatory), should the individual wishes to include more variety from starchy foods. The increase should be attained in 5 gr ECC increments every two weeks until carbohydrate intake reaches maintenance levels (i.e. carbohydrate intake equals protein intake)

Improvement of lean to fat mass ratio: for individuals that are not overweight (not more than 20% over ideal weight), wish to recompose their body (improve lean to fat mass ratio), do not suffer from any condition related to the metabolic syndrome or diabetes, or improve their general health, the level of carbohydrate restriction should be between 55-70 gr ECC

Maintenance of overall health: For individuals that are not overweight, diabetic, or do not suffer from any condition related to the metabolic syndrome, carbohydrate (ECC) intake should not exceed an equal amount of protein in the diet.

3. Fat intake

For weight loss purposes: individuals interested in losing fat weight should set their carbohydrate level according to therapeutic/corrective levels in order to induce an energy deficit without decreasing total food intake (as it is the case of a low calorie diet). While there is no need for additional fat intake, special emphasis must be placed on the selection of fat sources. The fat intake will be determined by the choice of protein source, thus, for weight loss purposes, lean

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sources of protein are recommended as well as sources of natural fats (avocados, nuts, etc.) except margarine, which should always be avoided due to its content of trans-fats.



Figure 1. Results obtained on a low carbohydrate diet, specifically "Protein Power". Triglycerides decreased from 725 to 125 mg/dl; cholesterol (total) decreased from >400 to 269 mg/dL; weight decreased from 250 to 189 lbs; waist size decreased from 44 to 36. Note the change in appearance with in my serum samples. Samples were cryopreserved by standard methods.